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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,316	06/27/2001	Shotaro Uchida	210093US2S	1655

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EXAMINER

IM, JUNGHWA M

ART UNIT PAPER NUMBER

2811

DATE MAILED: 11/21/2002

6

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicant N .

09/891,316

Examiner

Junghwa M. Im

Applicant(s)

UCHIDA, SHOTARO

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-20 is/are allowed.
- 6) ☒ Claim(s) 8-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of claims 8-20 in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 11, the specification does not disclose a tie bar has a plurality of sub tie bars. Does a sub tie bar mean a portion of a tie bar which connect a single inner lead and a corresponding external lead?

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (e) the invention was described in-
- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
  - (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 8, 10, 11 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Davis et al. (U.S. Pat. No. 6,144,093).

Regarding claim 8, Davis et al. show in Fig. 3, a semiconductor device comprising :

a plurality of external leads 24, 26, 28;

a die pad adjacent 22 to the plurality of external leads;

a semiconductor chip 30 mounted on the die pad and having a main electrode 38 and a subelectrode 36 smaller in area than the main electrode; and

two inner leads ( portions of leads connected to 44, 46) connecting for connecting the main electrode 38 and the subelectrode 36 on the semiconductor chip 30 to corresponding connecting pads 22 of the plurality of external leads 24, 26, 28 two inner leads having a tie bar cut.

Regarding claim 10, Davis et al. show in Fig. 3, the tie bar is provided midway on and between the external leads 24, 26, 28 to which the two inner leads (portions of leads connecting 44, 46) are connected.

Regarding claim 11, in so far as understood, Davis et al. show in Fig. 3, the tie bar has a plurality of sub tie bars.

Regarding claim 14, Davis et al. show in Fig. 3, the semiconductor chip includes a MOSFET 30.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al. in view of Jeong et al. (U.S. Pat. No. 6,229,205).

Claim 8 has been discussed previously.

Regarding claim 12, Davis et al. do not teach a die pad with a notch facing a tie bar.

However, Jeong et al. show in Fig. 5, the die pad 70 has a notch 72 (a through hole) in a portion that faces the tie bar 78.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of Jeong et al. into the device of Davis et al. in order to have a through hole, a notch on a die pad since a through hole on a die pad increases the adhesion strength between the semiconductor chip and the package body resulting in improvement of the reliability in a packaged device.

Regarding claim 13, Davis et al. do not teach the tie bars formed higher than a chip.

However, Jeong et al. show in Fig. 3B, a package device with tie bar portions 46, 47 formed higher than a top of the semiconductor chip 50.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Davis et al. with the teaching of Jeong et al. since forming a tie bar higher than the top of the semiconductor chip strengthens the mechanical support between the lead and the die pad.

#### ***Claim Rejections - 35 USC § 103***

Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al. in view of Kuraishi et al. (U.S. Pat. No. 5,859,471).

Claim 1 has been discussed previously.

Regarding claim 9, Davis et al. do not explicitly show the relative size of the tie bar.

However, Kuraishi et al. show in Fig. 1B, a tie bar 20a made smaller in thickness than other portions of the inner leads 18.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Davis et al. to make a tie bar thinner than the inner leads in order to easily cut out to separate the adjacent leads as taught by Kuraishi et al. (col. 4, lines 58-63).

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*Allowable Subject Matter*

Claims 15-20 are allowed.

The following is an examiner's statement of reasons for allowance.

No prior art teaches or renders a semiconductor device with combinations of elements as set forth in the claims, including in particular a plurality of a die pad having a notch engaged with a vertically formed protruding lead portion which connects a neighboring die in such a manner as recited in the claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junghwa M. Im whose telephone number is (703) 305-3998. The examiner can normally be reached on MON.-FRI. 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

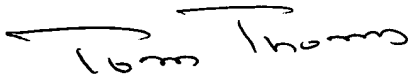
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JMI  
November 12, 2002

  
TOM THOMAS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800